

Resumé

The aim of this thesis is to summarize actual results of the field research of invasive neophytes' occurrence in the riverbank vegetation of selected water courses in the Czech Republic. In total approximately 850 km of the riverbank vegetation was mapped using author's own method.

The riverbank vegetation was defined according to Novak et al. (1986) as the vegetation belt along a water course with boundaries represented by the water surface and the riverbank edge. The occurrence of 22 most important invasive neophytes (sensu Pyšek et al. 2002) was registered using a logarithmical scale (1 = 1–9 specimen, 2 = 10–99 specimen, 3 = 100–999 specimen etc.). Some related species were not recognized (following species were aggregated together: *Galinsoga parviflora* and *G. ciliata*; *Solidago gigantea* and *S. canadensis*; *Parthenocissus quinquefolia* and *P. inserta* and *Reynoutria japonica*, *R. sachalinensis* and *R. × bohemica*). In total, occurrence of 17 taxons was registered. The field research was conducted during the summer period of 2006, 2007 or 2008. Development in the years 2006 and 2008 could be compared for 218 segments, that was mapped in both time relations.

The occurrence of invasive neophytes (17 taxons) was registered for each of the 500 m long segments (in total 1693 segments was mapped). The number of specimen was registered using a logarithmical scale. Segments were defined using river navigation or important points of orientation (e. g. bridges or weirs).

Total number of taxons, total number of specimen, simple index of invasive neophytes load (I_s) and weighted index of invasive neophytes load (I_w) were calculated for each segment. The number of specimen was derived from registered values such as the mean value of the interval (for the interval 1–9 the value 5 was used, for the interval 10–99 the value 50 etc.).

The simple index of invasive neophytes' load was calculated for each segment using the $I_s = \log NS + NT$ formula, where NS = total number of invasive species specimen and NT = number of registered taxons. This index shows the total invasive species load for each segment taking into account the number of present taxons and number of specimen (the values of NT and NS have similar importance in this calculation).

The weighted index of invasive neophytes' load takes into account plant size, it's life history and potential risk for indigenous flora or people and human activities. The number of

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specimen of each taxon is weighted by certain coefficient. The value of weighted index of invasive neophytes' load was calculated using the following formula: $I_w = \log (\sum NS_x \cdot k_x)$, where NS_x = number of specimen of the taxon x and k_x = coefficient of the taxon x .

Some other characteristics are presented for parts of the water courses (i. e. groups of neighbouring segments with similar geographical and ecological conditions): total number of taxon, average number of taxons per segment, share of segments with occurrence of each taxon, average number of specimen per segment of each taxon, average number of specimen per occupied segment of each taxon, average total number of specimen of all taxons per segment, average value of the simple index of invasive neophytes' load and average value of the weighted index of invasive neophytes' load.

Results are presented usually for parts of the water courses. Results for the Labe River, the Bečva River, the Jizera River, the Mrlina River and some other smaller tributaries of the Labe River (Cidlina, Vymola, Vyrovka and its source Vavřinec) and the Morava River (Blata), the Sazava River and the Lužnice River are presented like case studies. The Bečva River was considered to be the water course with the highest level of invasion neophytes' load. On the other hand, the presence of invasive neofytes was rather low in the riverbank vegetation of the Mrlina River and other smaller tributaries of the Labe River and the Morava

River. The reason of both extremes isn't so clear. The most representative data are presented for the Labe River, especially its central part between Veletov (Kolin district) and Brandys nad Labem, which was mapped completely. In total approximately 46 % of all the Labe River course was mapped.

The most frequent taxons were *Conyza canadensis*, *Erigeron annuus*, *Helianthus tuberosus*, *Impatiens glandulifera*, *I. parviflora*, *Reynoutria* sp., *Robinia pseudacacia*, *Solidago canadensis* a *S. gigantea*. The highest number of occupied segments was recorded for *Impatiens glandulifera* and *I. parviflora* (approximately 43 %), the highest number of specimen was recorded for *Helianthus tuberosus* (more than 2000 specimen per segment). Some of invasive neophytes were registered only in the riverbank vegetation of one or some few water courses (*Heracleum mantegazzianum*, *Lupinus polyphyllus* and *Rudbeckia laciniata*), but the occurrence was significant there. On the other hand the occurrence of *Lycium barbarum* and *Quercus rubra* was so low and this species could be considered to be nonsignificant as for its occurrence in the riverbank vegetation.

The typology of water courses from the invasive neophytes' load point of view was proposed. This typology is based on results of cluster analysis and the parts of water courses